

## Publication Brief for Resource Managers

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# How Pinyon Thinning Treatments Affect Wildfire Fuel Loads

Woodlands dominated by pinyon and juniper (*Pinus* and *Juniperus* spp.) have drastically increased across the western U.S. in the 1900's due to human influence. Results include decreased aquifer recharge, increased erosion and a loss of historically present sagebrush-steppe habitats and wildlife. Fire regimes have shifted to longer interval but higher intensity crown fires. In restoring sagebrush-steppe systems, various pinyon-juniper thinning treatments have been attempted, yet their effects have been poorly documented.

A report by USGS in cooperation with the Bishop Field Office of the U.S. Bureau of Land Management now offers insights on thinning treatments and their effects on fuel load and vegetative community characteristics. At two sites in Mono County, California, two thinning treatments were compared: machine mastication versus cut/pile/burn by hand crews using chain saws.

Vegetative conditions (species density, richness, tree cover, etc.) and fuelbed conditions (fuel cover and depth, tree characteristics, etc.) were recorded before treatment in 2006, and again three years later in 2009.

Overall, both mastication and cut/pile/burn produced similar effects. Compared to control plots, both reduced tree cover, increased vegetative species richness and increased cover and density of forbs and grasses. The treatments chiefly differed in operation costs and mass of fine woody fuels created.

The experimental plots will continue to be monitored to evaluate long-term treatment effects. These efforts help address the significant need across the U.S. to refine fuel management treatments that restore historic fire regimes, while minimizing negative side-effects.

### Management Implications

- Mastication and cut/pile/burn are equally effective treatments for thinning mature pinyons, although mastication operations are more expensive.
- Mastication creates greater loads of 1-100-hour fuels and shredded woody vegetation
- Both treatments stimulated abundance and density of perennial grass cover and native annual forbs. Effect on shrubs and cheatgrass are less clear.
- Increased live herbaceous cover may enhance surface fuels and fire spread during dry years.

#### THIS BRIEF REFERS TO:

Matchett, J., M. Brooks, A. Halford, D. Johnson, H. Smith. 2010. Evaluating the Effects of Pinyon Thinning Treatments at a Wildland Urban Interface. USGS Administrative Report. El Portal, CA, 28 pp.

<http://www.werc.usgs.gov/yosemite>  
<http://www.werc.usgs.gov/pinyonthinning>



Mechanical mastication, such as with this single-operator machine, is one type of treatment for thinning plots of live, mature pinyon stands. Photo: USGS.